

SUMAS WATER SYTEM

2010 Hydrant Fire Flow Analysis

Fire flow/Hydrant Report:

Specified Minimum Pressure(psi or kPa): 20.0
 Minimum Static Pressure(psi or kPa) : 26.7
 Sp.Min Pres@FirePump Suctn(psi or kPa): 0.0

TANK DIAMETER: 60 ft. WATER ELEVATION 201 ft.

NO PUMPS ON

Flow-1: Flowrate to maintain the specified pressure at (hydrant) node
 Node-2: Node that has a lower pressure than specified value at Flow-1
 Flow-2: Flowrate to maintain the specified pressure at Node-2
 Flow-3: Flowrate to maintain the specified pressure at Fire Pump Suction
 (Flow-3 is based on combined value of hydrant and hose constants)

Results are based on using PHD at Nodes (not MDD)

Hose Constant = 0.00

Required Flow GPM	Hydrant Node	Hydrant Constant	Elevation	Demand gpm	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2	Flow-3 gpm	Flow Capacity	NFPA Color
500	H-001										
500	H-002										
500	H-003										
1,000	H-100	0.0	43.0	0.0	58.2	1672.3	1361.0	255	2169.2	1361.0	GREEN
1,000	H-101	0.0	43.0	0.0	58.1	1712.4	1358.5	255	2166.1	1358.5	GREEN
1,000	H-102	0.0	43.0	0.0	58.1	1742.7	1355.5	255	2161.4	1355.5	GREEN
1,000	H-103	0.0	42.0	0.0	58.6	1777.3	1361.5	255	2169.9	1361.5	GREEN
1,000	H-104	0.0	42.0	0.0	58.7	1748.9	1362.3	255	2170.0	1362.3	GREEN
1,000	H-105	0.0	45.0	0.0	57.8	1766.0	1394.8	255	2221.6	1394.8	GREEN
1,000	H-106	0.0	44.0	0.0	58.0	1708.5	1377.2	255	2194.5	1377.2	GREEN
1,000	H-107	0.0	45.0	0.0	57.6	1485.3	1377.2	255	1995.9	1377.2	GREEN

Required Flow GPM	Hydrant Node	Hydrant Constant	Elevation	Demand gpm	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2	Flow-3 gpm	Flow Capacity	NFPA Color
1,000	H-107	0.0	45.0	0.0	57.6	1485.3	1377.2	255	1995.9	1377.2	GREEN
1,000	H-108	0.0	45.0	0.0	57.6	1494.7	1377.2	255	2009.7	1377.2	GREEN
1,000	H-109	0.0	42.0	0.0	58.4	1273.2			1684.5	1273.2	GREEN
1,000	H-200	0.0	40.0	0.0	59.8	1940.9	1461.0	255	2304.0	1461.0	GREEN
1,000	H-201	0.0	42.0	0.0	58.8	1726.0	1431.0	255	2275.0	1431.0	GREEN
1,000	H-202	0.0	40.0	0.0	59.3	1832.5	1408.1	255	2233.2	1408.1	GREEN
1,000	H-203	0.0	44.0	0.0	57.7	1609.3	1401.3	255	2163.4	1401.3	GREEN
1,000	H-204	0.0	44.0	0.0	57.5	1574.5	1380.3	255	2117.6	1380.3	GREEN
1,000	H-205	0.0	44.0	0.0	57.3	1560.0	1360.2	255	2101.8	1360.2	GREEN
1,000	H-206	0.0	42.0	0.0	57.9	1593.4	1335.0	255	2135.8	1335.0	GREEN
1,000	H-207	0.0	40.0	0.0	58.5	1542.9	1302.9	255	2066.3	1302.9	GREEN
1,000	H-208	0.0	40.0	0.0	58.5	1644.7	1302.9	255	2080.2	1302.9	GREEN
1,000	H-209	0.0	40.0	0.0	58.0	1707.2	1239.9	255	1977.3	1239.9	GREEN
1,000	H-210	0.0	40.0	0.0	57.7	1684.6	1216.0	255	1939.3	1216.0	GREEN
1,000	H-211	0.0	43.0	0.0	57.1	1554.4	1291.6	255	2053.2	1291.6	GREEN
1,000	H-212	0.0	43.0	0.0	57.1	1542.0	1291.9	255	2053.6	1291.9	GREEN
1,000	H-213	0.0	43.0	0.0	57.1	1441.5	1291.9	255	1947.8	1291.9	GREEN
1,000	H-214	0.0	42.0	0.0	57.5	1559.9	1290.4	255	2048.7	1290.4	GREEN
1,000	H-215	0.0	40.0	0.0	58.4	1692.1	1282.5	255	2036.4	1282.5	GREEN
1,000	H-216	0.0	41.0	0.0	57.9	1698.8	1279.4	255	2033.5	1279.4	GREEN
1,000	H-217	0.0	41.0	0.0	57.9	1606.1	1279.4	255	2033.5	1279.4	GREEN
1,000	H-218	0.0	41.0	0.0	57.9	1544.8	1279.4	255	2033.5	1279.4	GREEN
1,000	H-219	0.0	41.0	0.0	57.9	1449.0	1279.4	255	1947.3	1279.4	GREEN
1,000	H-220	0.0	41.0	0.0	57.9	1494.7	1279.4	255	2014.2	1279.4	GREEN
500	H-221	0.0	42.0	0.0	57.8	1611.9	1320.2	255	2110.8	1320.2	GREEN
750	H-302	0.0	37.0	0.0	61.1	1273.1	1240.4	137	1620.2	1240.4	GREEN
750	H-303	0.0	36.0	0.0	62.7	1751.4	1642.5	255	2256.7	1642.5	BLUE
750	H-304	0.0	38.0	0.0	61.6	1832.8	1615.8	255	2389.0	1615.8	BLUE
500	H-305	0.0	36.0	0.0	61.5	1467.6			1908.8	1467.6	GREEN
500	H-306	0.0	35.0	0.0	61.9	1260.9	1235.4	168	1609.6	1235.4	GREEN
500	H-307	0.0	34.0	0.0	61.7	1368.1	1325.2	380	1755.0	1325.2	GREEN
500	H-308	0.0	37.0	0.0	60.6	1538.4	1492.5	255	2017.5	1492.5	GREEN
750	H-309	0.0	36.0	0.0	61.3	1661.0	1506.7	255	2167.3	1506.7	BLUE
750	H-310	0.0	36.0	0.0	61.6	1846.5	1528.2	255	2406.3	1528.2	BLUE

Required Flow GPM	Hydrant Node	Hydrant Constant	Elevation	Demand gpm	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2	Flow-3 gpm	Flow Capacity	NFPA Color
750	H-311	0.0	37.0	0.0	61.4	2050.7	1554.2	255	2455.4	1554.2	BLUE
500	H-312	0.0	37.0	0.0	60.9	1657.2	1449.7	255	2160.7	1449.7	GREEN
500	H-313	0.0	37.0	0.0	59.1	869.6			1129.1	869.6	ORANGE
500	H-314	0.0	36.0	0.0	59.5	797.8			1030.5	797.8	ORANGE
500	H-315	0.0	36.0	0.0	59.2	640.0			822.8	640.0	ORANGE
500	H-317	0.0	36.0	0.0	58.9	839.5			1091.7	839.5	ORANGE
750	H-318	0.0	36.0	0.0	60.9	1742.4	1366.8	255	2179.8	1366.8	GREEN
750	H-319	0.0	38.0	0.0	59.2	1235.5			1625.0	1235.5	GREEN
500	H-320	0.0	36.0	0.0	58.6	1125.5	1075.5	255	1491.1	1075.5	GREEN
500	H-321	0.0	36.0	0.0	58.6	853.1			1114.3	853.1	ORANGE
500	H-322	0.0	37.0	0.0	61.1	820.6			1046.8	820.6	ORANGE
500	H-323	0.0	36.0	0.0	58.6	665.9			864.4	665.9	ORANGE
500	H-324	0.0	35.0	0.0	61.0	1117.7			1457.1	1117.7	GREEN
500	H-350	0.0	35.0	0.0	60.9	1023.4			1338.3	1023.4	GREEN
500	H-351	0.0	36.0	0.0	60.3	994.7			1303.9	994.7	ORANGE
500	H-352	0.0	37.0	0.0	59.8	932.3			1231.9	932.3	ORANGE
500	H-353	0.0	36.0	0.0	60.4	977.3			1284.8	977.3	ORANGE
500	H-354	0.0	36.0	0.0	60.4	888.1			1160.7	888.1	ORANGE
500	H-355	0.0	36.0	0.0	60.4	949.4			1243.6	949.4	ORANGE
500	H-400	0.0	37.0	0.0	54.4	290.3	272.8	268	372.9	272.8	RED
500	H-401	0.0	37.0	0.0	54.5	785.8	733.2	268	1056.1	733.2	ORANGE
500	H-402	0.0	39.0	0.0	53.4	776.4			1101.3	776.4	ORANGE
500	H-403	0.0	39.0	0.0	54.7	991.0	935.5	255	1393.4	935.5	ORANGE
500	H-404	0.0	38.0	0.0	55.8	1254.2	985.4	255	1585.9	985.4	ORANGE
500	H-405	0.0	37.0	0.0	55.0	819.0	779.0	268	1129.5	779.0	ORANGE
500	H-406	0.0	38.0	0.0	56.0	1159.2	1017.7	255	1590.1	1017.7	GREEN
500	H-407	0.0	36.0	0.0	57.0	1113.2	823.9	255	1323.6	823.9	ORANGE
500	H-408	0.0	37.0	0.0	57.4	880.7			1167.0	880.7	ORANGE
750	H-409	0.0	37.0	0.0	57.9	1040.2	1022.4	209	1367.6	1022.4	GREEN
750	H-410	0.0	36.0	0.0	58.2	1121.2	1026.1	255	1463.9	1026.1	GREEN
750	H-411	0.0	37.0	0.0	57.7	916.3	866.8	215	1173.4	866.8	ORANGE
750	H-412	0.0	39.0	0.0	57.9	1179.8			1566.1	1179.8	GREEN
750	H-413	0.0	39.0	0.0	57.4	1394.0	1127.0	255	1812.9	1127.0	GREEN
750	H-414	0.0	37.0	0.0	57.7	1253.7	1077.8	255	1691.0	1077.8	GREEN

Required Flow GPM	Hydrant Node	Hydrant Constant	Elevation	Demand gpm	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2	Flow-3 gpm	Flow Capacity	NFPA Color
750	H-416	0.0	40.0	0.0	57.1	1486.3	1152.1	255	1844.5	1152.1	GREEN
750	H-417	0.0	40.0	0.0	56.3	1457.2	1077.2	255	1729.7	1077.2	GREEN
500	H-418	0.0	38.0	0.0	56.7	1416.8	1037.9	255	1670.9	1037.9	GREEN
500	H-419	0.0	39.0	0.0	55.6	1234.5	1019.5	255	1632.9	1019.5	GREEN
500	H-420	0.0	39.0	0.0	55.9	1337.0	998.7	255	1610.6	998.7	ORANGE
500	H-421	0.0	38.0	0.0	56.0	1237.2	1001.6	255	1616.2	1001.6	GREEN
500	H-422	0.0	38.0	0.0	56.0	1202.2	1001.6	255	1616.2	1001.6	GREEN
500	H-423	0.0	35.0	0.0	53.9	663.1			938.5	663.1	ORANGE
500	H-424	0.0	41.0	0.0	52.2	619.9	607.0	267	875.9	607.0	ORANGE
750	H-425	0.0	41.0	0.0	53.8	891.0	841.2	267	1213.5	841.2	ORANGE
500	H-426	0.0	38.0	0.0	56.0	1228.8	1013.8	255	1637.6	1013.8	GREEN
500	H-427	0.0	38.0	0.0	56.0	1228.0	1010.4	255	1631.6	1010.4	GREEN
500	H-428	0.0	38.0	0.0	56.0	1234.3	1006.8	255	1625.6	1006.8	GREEN
500	H-429	0.0	39.0	0.0	54.9	919.6	900.0	715	1262.0	900.0	ORANGE

City of Sumas													2010 System	
Node Demand Information:														
January 18, 2011														
Node Number	Location	Downstream Nodes	Node Location	SMALL USERS					Residential User PHD	LARGE USER ² (gpm)	Major User #	PHD NODE DEMAND (gpm)		
				2010 Services ¹	Demand (gpm) per Node	Cum. # of Services	Cum. MID	MID Node Demand (gpm)						
410	Edge View St, E of pumps		DE	9	7.7	9	31.0	31.0	30.0			29.96		
412	Spring St, E of pumps		DE	3	2.6	3	19.0	19.0	18.4			18.36		
257	Edge View & Spring St, E of 410, 412		DE	0	0.0	12	37.0	-13.0	-12.6			-12.56		
256	Border & Spring St, E of pumps 257, 410, 412		loop	1	0.9	13	11.2	-25.8	-25.0			-24.96		
242	Kneuman, S of pumps		loop	0	0.0	0	0.0	0.0	0.0			0.00		
117	pumps		loop	0	0.0	0	0.0	0.0	0.0			0.00		
243	pumps		loop	0	0.0	0	0.0	0.0	0.0			0.00		
115	Border, W of Arthur		loop	0	0.0	0	0.0	0.0	0.0	1.0	6.5	47	6.47	
118	Border, W of Arthur		loop	1	0.9	1	0.9	0.9	0.8				0.83	
250	Kneuman, E of Spring St		loop	2	1.7	2	1.7	1.7	1.7				1.66	
119	Kneuman, S of Arthur		loop	7	6.0	7	6.0	6.0	5.8				5.81	
374	E end of Arthur's Way		DE	3	2.6	3	19.0	19.0	18.4				18.36	
373	W end of Arthur's Way		DE	4	3.4	4	21.0	21.0	20.3				20.29	
372	Arthur's Way, W of tanks	373, 374	DE	2	1.7	9	31.0	-9.0	-8.7				-8.70	
371	Border, W of tanks	372, 373, 374	loop	0	0.0	9	7.7	-23.3	-22.5				-22.48	
120	Border, near tanks		loop	1	0.9	1	0.9	0.9	0.8				0.83	
121	W Garfield, end of Wash Ave		loop	2	1.7	2	1.7	1.7	1.7				1.66	
122	Barbo Rd and Front St	382, 383, 384	loop	4	3.4	4	3.4	3.4	3.3				3.32	
123	Front St, Cedar Prime entrance		loop	2	1.7	2	1.7	1.7	1.7				1.66	
248	Front St, W side of IKO		loop	0	0.0	0	0.0	0.0	0.0				0.00	
400	IKO, hydrant W side		DE	0	0.0	0	0.0	0.0	0.0				0.00	
398	IKO	400	loop	0	0.0	0	0.0	0.0	0.0				0.00	
396	IKO		loop	1	0.9	1	0.9	0.9	0.8				0.83	
247	Front St, E side of IKO		loop	0	0.0	0	0.0	0.0	0.0	1.0	88.9	55	88.88	
124	E end Wash Ave, near tanks		loop	1	0.9	1	0.9	0.9	0.8				0.83	
378	Tank		loop	0	0.0	0	0.0	0.0	0.0				0.00	
272	Just E of tanks		loop	0	0.0	0	0.0	0.0	0.0				0.00	
274	Victoria Court, SE of tanks		loop	3	2.6	3	2.6	2.6	2.5				2.49	
275	Victoria Court, SE of tanks		loop	0	0.0	0	0.0	0.0	0.0				0.00	
125	Border, E of tanks		loop	0	0.0	0	0.0	0.0	0.0				0.00	
126	Border @ RR tracks		loop	2	1.7	2	1.7	1.7	1.7				1.66	
127	RR tracks N or W end of Cleveland		loop	0	0.0	0	0.0	0.0	0.0				0.00	
128	S end of Barkley Ave, E of H ^{old 622 + 62}		loop	3	2.6	3	2.6	2.6	2.5				2.49	
263	W. Garfield & N end of Bob Mitchell Way		loop	0	0.0	0	0.0	0.0	0.0				0.00	
129	N end of Bob Mitchell @ Garfield		loop	1	0.9	1	0.9	0.9	0.8				0.83	
130	Bob Mitchell btwn 2nd and 3rd		loop	0	0.0	0	0.0	0.0	0.0				0.00	
131	W 2nd St, E of Bob Mitchell		loop	3	2.6	3	2.6	2.6	2.5				2.49	
132	Locust St, btwn 2nd and 3rd, E of Bob Mitchell		DE	4	3.4	4	21.0	21.0	20.3				20.29	
133	Johnson St, N of W 3rd St	132	loop	3	2.6	7	6.0	-15.0	-14.5				-14.48	
134	RR and Garfield		loop	0	0.0	0	0.0	0.0	0.0				0.00	
251	Garfield, E of RR		loop	0	0.0	0	0.0	0.0	0.0	1.0	2.2	35	2.24	
270	W end of First St, N		DE	1	0.9	1	15.0	15.0	14.5				14.49	
269	W end of First St, S		DE	1	0.9	1	15.0	15.0	14.5				14.49	
135	W end of First St	269, 270	DE	1	0.9	3	19.0	-11.0	-10.6				-10.63	
252	First St btwn RR and Cherry	135, 269, 270	DE	0	0.0	3	19.0	0.0	0.0				0.00	
142	Cherry & First St	252, 135, 269	loop	2	1.7	5	4.3	-14.7	-14.2	1.0	3.7	40	-10.47	
116	RR and Second St	none	loop	0	0.0	0	0.0	0.0	0.0				0.00	
271	N of 2nd St, W of RR		DE	2	1.7	2	17.0	17.0	16.4				16.43	
136	2nd St btwn RR and Cherry	271	loop	2	1.7	4	3.4	-13.6	-13.1				-13.11	
138	Cherry St & Harrison		loop	0	0.0	0	0.0	0.0	0.0				0.00	
139	Cherry St & S of Harrison		loop	0	0.0	0	0.0	0.0	0.0	1.0	4.0	41	3.97	
140	Cherry St & Garfield		loop	1	0.9	1	0.9	0.9	0.8	1.0	4.5	44	5.29	
141	Cherry St & Cleveland	none	loop	3	2.6	3	2.6	2.6	2.5	1.0	4.2	42	6.74	
143	Cherry St & Second St		loop	3	2.6	3	2.6	2.6	2.5	1.0	2.3	36	4.80	
137	Boundary Ave, E of Cherry St		DE	2	1.7	2	17.0	17.0	16.4	1.0	3.6	38	20.05	
144	Sumas Ave, N of Harrison St	137	DE	1	0.9	3	19.0	2.0	1.9				1.93	
145	Sumas Ave & Harrison St	144, 137	loop	4	3.4	7	6.0	-13.0	-12.5				-12.55	
146	Cleveland & Sumas Ave		loop	3	2.6	3	2.6	2.6	2.5				2.49	
260	Cleveland & Sumas Ave		loop	2	1.7	2	1.7	1.7	1.7	1.0	11.7	50	13.39	
147	Garfield & Sumas		loop	12	10.3	12	10.3	10.3	10.0				9.96	
266	S of Garfield on Sumas		DE	2	1.7	2	17.0	17.0	16.4				16.43	
148	Garfield & Sumas	266	loop	2	1.7	4	3.4	-13.6	-13.1				-13.11	
149	First St & Sumas		loop	12	10.3	12	10.3	10.3	10.0				9.96	
150	Second St btwn Cherry & Sumas		loop	2	1.7	2	1.7	1.7	1.7				1.66	
151	Second St & Sumas		loop	4	3.4	4	3.4	3.4	3.3				3.32	
152	Btwn 2nd & 3rd, Btwn Cherry & Sumas		loop	2	1.7	2	1.7	1.7	1.7				1.66	
153	Sumas Ave, btwn 2nd & 3rd		loop	1	0.9	1	0.9	0.9	0.8				0.83	
154b	N of Harrison & Fisk		DE	2	1.7	2	17.0	17.0	16.4				16.43	
154a	N of Harrison & Fisk	154b	DE	0	0.0	2	17.0	0.0	0.0				0.00	
154	Harrison & Fisk	154a, 154b	loop	6	5.2	8	6.9	-10.1	-9.8				-9.78	
155	Cleveland & Fisk	none	loop	7	6.0	7	6.0	6.0	5.8				5.81	
157	Garfield & Fisk		loop	6	5.2	6	5.2	5.2	5.0				4.98	
158	Lawson & Harrison		loop	2	1.7	2	1.7	1.7	1.7				1.66	
159	Lawson & Cleveland	none	loop	6	5.2	6	5.2	5.2	5.0				4.98	
160	Lawson & Garfield		loop	8	6.9	8	6.9	6.9	6.6				6.64	
161	Lawson & First		loop	10	8.6	10	8.6	8.6	8.3				8.30	
162	Lawson & Second		loop	18	15.5	18	15.5	15.5	14.9				14.95	
168	E end of Harrison		DE	1	0.9	1	15.0	15.0	14.5				14.49	
163	Harrison, E of Lawson St	168	loop	1	0.9	2	1.7	-13.3	-12.8				-12.83	
164	Cleveland E of Lawson St		loop	4	3.4	4	3.4	3.4	3.3				3.32	
165	Garfield & Gough St	DEAD END	loop	5	4.3	5	4.3	4.3	4.2				4.15	
166	First St & Gough St		loop	5	4.3	5	4.3	4.3	4.2				4.15	
167	Second St S of Gough St		loop	8	6.9	8	6.9	6.9	6.6				6.64	

City of Sumas										2010 System				PHD
Node Demand Information:														NODE
January 18, 2011														DEMAND
Node Number	Location	Downstream	Nodes	SMALL USERS					Residential	# of	LARGE	Major	PHD	
				Node	# of	Demand	Cum.	Cum.						MID Node
2010				Location	Services ¹	(gpm) per Node	Services	MID	Demand (gpm)	PHD	Larg. Users	(gpm)	User #	(gpm)
169	Garfield St, E of Gough			loop	1	0.9	1	0.9	0.9	0.8				0.83
368	S end of Roosevelt			DE	6	5.2	6	25.0	25.0	24.2				24.16
367	Garfield St & Roosevelt Ct	368		loop	2	1.7	8	6.9	-18.1	-17.5				-17.51
170	Garfield & Jefferson Ct.			loop	0	0.0	0	0.0	0.0	0.0				0.00
175	S end of Jefferson Ct.			DE	5	4.3	5	23.0	23.0	22.2				22.23
171	Jefferson Ct & Lincoln Circle	175		loop	2	1.7	7	6.0	-17.0	-16.4				-16.41
173	E end Lincoln Circle			loop	6	5.2	6	5.2	5.2	5.0				4.98
172	Garfield & Wilson Lane			loop	3	2.6	3	2.6	2.6	2.5				2.49
265	E end Taylor Circle			DE	7	6.0	7	27.0	27.0	26.1				26.09
264	Wilson Lane & Taylor Circle	265		loop	7	6.0	14	12.0	-15.0	-14.5				-14.47
246	S end of Wilson Lane			DE	5	4.3	5	23.0	23.0	22.2				22.23
245	Wilson Lane	246		loop	6	5.2	11	9.5	-13.5	-13.1				-13.09
380	N of Garfield, E of Wilson Lane			DE	1	0.9	1	15.0	15.0	14.5				14.49
379	Garfield Rd, E of Wilson Lane	380		loop	0	0.0	1	0.9	-14.1	-13.7				-13.66
174	E end of Garfield			loop	2	1.7	2	1.7	1.7	1.7		167.3	SRWA Jones Road Connection	168.96
176	E end of First St.			loop	4	3.4	4	3.4	3.4	3.3				3.32
177	E end of Second St			loop	1	0.9	1	0.9	0.9	0.8				0.83
268	E end of Victoria St & Heron Lane		3 apt building	DE	2	1.7	2	17.0	17.0	16.4				16.43
178	N end of Victoria St	268		DE	1	0.9	3	19.0	2.0	1.9				1.93
179	Victoria St, N of Mitchell	178, 268		DE	0	0.0	3	19.0	0.0	0.0				0.00
180	Victoria St & Mitchell St	179, 178, 268		loop	2	1.7	5	4.3	-14.7	-14.2				-14.21
182	E of Victoria St, S of Mitchell			DE	3	2.6	3	19.0	19.0	18.4				18.36
181	E of Victoria St, S of Mitchell	182		loop	0	0.0	3	2.6	-16.4	-15.9				-15.87
183	Victoria St & Morton			loop	3	2.6	3	2.6	2.6	2.5				2.49
184	Rock Rd & Swartwood rd			loop	2	1.7	2	1.7	1.7	1.7				1.66
346	S end of Swartwood Rd			DE	7	6.0	7	27.0	27.0	26.1				26.09
330	Swartwood Rd & Rock Rd	346		loop	0	0.0	7	6.0	-21.0	-20.3				-20.28
349	Swartwood Rd & Rock Rd			loop	0	0.0	0	0.0	0.0	0.0		387.5	SRWA Rock Road Connection	387.47
185	Front St & Victoria St			loop	9	7.7	9	7.7	7.7	7.5				7.47
186	Mitchell Rd, W of Victoria St			loop	2	1.7	2	1.7	1.7	1.7				1.66
187	Morton Rd, W of Victoria St			loop	6	5.2	6	5.2	5.2	5.0				4.98
188	Front St btwn Hovel and Victoria			loop	9	7.7	9	7.7	7.7	7.5				7.47
715	Hovel Rd at ball fields			loop	2	1.7	2	1.7	1.7	1.7		174.2	SRWA Hovel Road Connection	175.84
714	New Ballpark Sprinklers			DE	1	0.9	1	15.0	15.0	14.5	1.0	8.1	48	22.61
713		714		DE	0	0.0	1	15.0	0.0	0.0				0.00
712		714, 713, 715		loop	0	0.0	1	0.9	-14.1	-13.7				-13.66
190	Hovel Rd N of ball field			loop	7	6.0	7	6.0	6.0	5.8				5.81
189	Front St & Hovel Rd			loop	6	5.2	6	5.2	5.2	5.0				4.98
191	S of Front St, S of S end of Lawson			loop	2	1.7	2	1.7	1.7	1.7				1.66
193	Lawson St S side Front St			loop	0	0.0	0	0.0	0.0	0.0				0.00
365	Boon St S side Front St	none		loop	10	8.6	10	8.6	8.6	8.3	1.0	3.7	39	12.00
194	Boon Street complex			loop	10	8.6	10	8.6	8.6	8.3				8.30
791	Boon Street complex			loop	0	0.0	0	0.0	0.0	0.0	1.0	4.4	43	4.44
726	Boon Street complex			loop	20	17.2	20	17.2	17.2	16.6				16.61
721	Noble & Lawson			DE	3	2.6	3	19.0	19.0	18.4				18.36
723	Noble & Lawson	721		loop	5	4.3	8	6.9	-12.1	-11.7				-11.72
724	Boon St N side Front St			DE	4	3.4	4	21.0	21.0	20.3				20.29
192	Lawson St N side Front St	724		loop	0	0.0	4	3.4	-17.6	-17.0				-16.97
195	Lawson St N of Front St			loop	3	2.6	3	2.6	2.6	2.5				2.49
196	Lawson & Morton			loop	3	2.6	3	2.6	2.6	2.5				2.49
197	Mitchell, E of Lawson			loop	1	0.9	1	0.9	0.9	0.8				0.83
198	Lawson & Mitchell			loop	3	2.6	3	2.6	2.6	2.5				2.49
255	Gough St N of Mitchell	end		DE	1	0.9	1	15.0	15.0	14.5				14.49
200	Gough St N of Mitchell	255		loop	3	2.6	4	3.4	-11.6	-11.2				-11.17
199	Lawson btwn Mitch&Vanc			loop	1	0.9	1	0.9	0.9	0.8				0.83
201	Lawson & Vancouver			loop	6	5.2	6	5.2	5.2	5.0				4.98
202	Lawson & Columbia			loop	3	2.6	3	2.6	2.6	2.5				2.49
204	E end of Third St			DE	5	4.3	5	23.0	23.0	22.2				22.23
203	Third St & Lawson	204		loop	7	6.0	12	10.3	-12.7	-12.3				-12.26
205	Third St btwn Lawson & Sumas			loop	3	2.6	3	2.6	2.6	2.5				2.49
206	Third St & Sumas			loop	3	2.6	3	2.6	2.6	2.5				2.49
207	Third St & Cherry			loop	1	0.9	1	0.9	0.9	0.8	1.0	15.2	52	16.03
208	Cherry St just S of Columbia			loop	0	0.0	0	0.0	0.0	0.0	1.0	13.8	51	13.82
209	W end of Columbia@Cherry			DE	7	6.0	7	27.0	27.0	26.1				26.09
261	Columbia btwn Cher&Sumas	209		DE	0	0.0	7	27.0	0.0	0.0				0.00
211	Columbia & Sumas	261, 209		loop	2	1.7	9	7.7	-19.3	-18.6				-18.62
210	Sumas btwn Columbia & Third			loop	1	0.9	1	0.9	0.9	0.8				0.83
213	Vancouver near Cherry St			DE	4	3.4	4	21.0	21.0	20.3				20.29
253	Vancouver near Sumas Ave	213		DE	0	0.0	4	21.0	0.0	0.0				0.00
212	Vancouver & Sumas Ave	253, 213		loop	6	5.2	10	8.6	-12.4	-12.0				-11.99
214	Cherry St & W end of Vancouver			loop	1	0.9	1	0.9	0.9	0.8				0.83
215	W end Mitchell by Cherry			DE	6	5.2	6	25.0	25.0	24.2				24.16
262	Mitchell btwn Cher&Sumas	215		DE	0	0.0	6	25.0	0.0	0.0				0.00
216	Mitchell & Sumas	262, 215		loop	6	5.2	12	10.3	-14.7	-14.2				-14.19
217	E end of alley E of Sumas btwn Morton &			DE	1	0.9	1	15.0	15.0	14.5				14.49
218	Sumas btwn Morton & Mitchell	217		loop	4	3.4	5	4.3	-10.7	-10.3				-10.34
219	E of Cherry St and alley N of Morton			loop	5	4.3	5	4.3	4.3	4.2				4.15
220	W side of Cherry No of Morton			loop	2	1.7	2	1.7	1.7	1.7	1.0	4.6	45	6.22

City of Sumas																														
Node Demand Information:																														
January 18, 2011																														
2010 System																														
Node Number	Location	Downstream Nodes	Node	SMALL USERS					Residential User	LARGE USER ²	Major User #	PHD NODE DEMAND (gpm)																		
				2010 Demand (gpm) per Node	Cum. # of Services	Cum. MID	MID Node Demand (gpm)	PHD																						
2010																														
221	Morton & Cherry		loop	2	1.7	2	1.7	1.7				1.66																		
244	Cherry S of Morton		loop	3	2.6	3	2.6	2.6				2.49																		
222	Morton btwn Cherry and Sumas		loop	3	2.6	3	2.6	2.6				2.49																		
254	Morton btwn Cherry and Sumas		loop	0	0.0	0	0.0	0.0				0.00																		
223	Morton & Sumas		loop	1	0.9	1	0.9	0.9				0.83																		
224	Sumas S of Morton		loop	3	2.6	3	2.6	2.6				2.49																		
225	Sumas Ave & Front St	none	loop	4	3.4	4	3.4	3.4				3.32																		
226	RR and Front St		loop	1	0.9	1	0.9	0.9				0.83																		
227	SR9, W of Noble St		DE	2	1.7	2	17.0	17.0				16.43																		
228	Noble St & Sumas Ave	227	loop	1	0.9	3	2.6	-14.4				-13.94																		
229	Sumas Ave N of Noble		loop	5	4.3	5	4.3	4.3				4.15																		
230	S end of Sumas Ave	DEAD END	loop	3	2.6	3	2.6	2.6				2.49																		
729	SR9 at Rodeo Grounds		DE	2	1.7	2	17.0	17.0				16.43																		
728	SR9 at Rodeo Grounds	729	loop	0	0.0	2	1.7	-15.3		1.0	4.9	46	-9.88																	
267	S end of Cherry/ SRWA connection		loop	0	0.0	0	0.0	0.0		1.0	299.6	#53 (18.6 gpm) + SRWA Easterbrook Road	299.63																	
231	Front St & Johnson		loop	1	0.9	1	0.9	0.9					0.83																	
232	S of Front at go carts		loop	3	2.6	3	2.6	2.6					2.49																	
233	Elenbaas		loop	0	0.0	0	0.0	0.0		1.0	20.6	54	20.57																	
234	Johnson St N of Front St		loop	2	1.7	2	1.7	1.7					1.66																	
235	N of Front St, W of Johnson St		loop	0	0.0	0	0.0	0.0					0.00																	
236	Johnson St N of Front St		loop	1	0.9	1	0.9	0.9					0.83																	
237	Johnson St N of Front St		loop	1	0.9	1	0.9	0.9					0.83																	
239	Teal Jones		DE	1	0.9	1	15.0	15.0					14.49																	
238	Teal Jones	239	loop	0	0.0	1	0.9	-14.1		1.0	9.2	49	-4.44																	
240	Teal Jones		loop	0	0.0	0	0.0	0.0					0.00																	
241	Teal Jones		loop	1	0.9	1	0.9	0.9					0.83																	
273	PSE		DE	1	0.9	1	15.0	15.0					14.49																	
381	Front St @ Socco		DE	1	0.9	1	15.0	15.0					14.49																	
258	Front St @ Cedar Prime	273, 381	loop	0	0.0	2	1.7	-28.3		1.0	2.8	37	-24.49																	
394	South end of Socco		DE	0	0.0	0	0.0	0.0					0.00																	
392	S end Darrell Jones	394	DE	0	0.0	0	0.0	0.0					0.00																	
390	Front St & Darrell Jones	392, 394	DE	0	0.0	0	0.0	0.0					0.00																	
388	Front St E of IKO	390, 392, 394	DE	0	0.0	0	0.0	0.0					0.00																	
386	Hessgrave E of IKO	388, 390, 394	loop	0	0.0	0	0.0	0.0					0.00																	
370	Border Patrol S of Front St		DE	1	0.9	1	15.0	15.0					14.49																	
369	Front St @ Border Patrol	370	loop	0	0.0	1	0.9	-14.1					-13.66																	
				521	447.7			447.7		433	21.0	1,248	1,680																	
										SRWA	1,010		1,680																	
										Sumas large users	238																			
¹ "# of services" at each node is based on a review of a city aerial photo showing home and business locations and info from 1999 model. The number of connections used in the model (521) exceeds the number of services the City presently has (496).																														
² "Large User" gpm rates comes from actual usage with estimated peaking factors (see Large User Worksheet). PHD flow rates, as estimated using DOH conversion to ERUs, was not used.																														
Maximum Instantaneous Demand - calculated for entire system System MID (gpm) 447.7 Loop Factor 0.859 (Formula from 1983 Sizing Guidelines table) MID=0.7(# of connections -100)+153 MDD = 2 * ADD ADD = 282 gal/day (Residential ADD from Calculations) MDD = 564 PHD = 433 gpm (Residential users only) PHD/MID= 0.966																														
Equation 5-1: Determine PHD $PHD = (MDD/1440) [(C)(N) + F] + 18$ Where PHD = Peak Hourly Demand, (gallons per minute) C = Coefficient Associated with Ranges of ERUs N = Number of ERUs F = Factor Associated with Ranges of ERUs MDD = Maximum Day Demand, (gpd/ERU)																														
Table 5-1 <table border="1"> <thead> <tr> <th>Number of ERUs (N)</th> <th>C</th> <th>F</th> </tr> </thead> <tbody> <tr> <td>15 - 50</td> <td>3.0</td> <td>0</td> </tr> <tr> <td>51 - 100</td> <td>2.5</td> <td>25</td> </tr> <tr> <td>101 - 250</td> <td>2.0</td> <td>75</td> </tr> <tr> <td>251 - 500</td> <td>1.8</td> <td>125</td> </tr> <tr> <td>> 500</td> <td>1.6</td> <td>225</td> </tr> </tbody> </table>													Number of ERUs (N)	C	F	15 - 50	3.0	0	51 - 100	2.5	25	101 - 250	2.0	75	251 - 500	1.8	125	> 500	1.6	225
Number of ERUs (N)	C	F																												
15 - 50	3.0	0																												
51 - 100	2.5	25																												
101 - 250	2.0	75																												
251 - 500	1.8	125																												
> 500	1.6	225																												

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* * * * * K Y P I P E 5 * * * * *
*
*           Pipe Network Modeling Software           *
*
*           Copyrighted by KYPIPE LLC               *
*           Version 5 - February 2010               *
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Date & Time: Mon Jan 24 14:38:38 2011

Master File : p:\s\sums0001\0600info\water\steady state\2011-01-24 2010 ss\2011-01-24 2011 ss.KYP\2011-01-24 2011 ss.P2K

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*****
S U M M A R Y   O F   O R I G I N A L   D A T A
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Tank Diameter: 60 ft; Water Elevation 201 ft.
No Pumps ON

U N I T S S P E C I F I E D

FLOWRATE = gallons/minute
HEAD (HGL) = feet
PRESSURE = psig

P I P E L I N E D A T A

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
P-379	O-Pump 5	379B	2.00	6.00	130.0000	0.00
P-380	O-Pump 4R	380B	2.00	6.00	130.0000	0.00
P-382	146	155	343.00	6.00	130.0000	0.00
P-383	119	121	1154.00	2.00	130.0000	0.00
P-384	120	124	294.00	10.00	130.0000	0.00
P-385	125	126	390.00	6.00	100.0000	0.00
P-386	126	127	385.00	6.00	130.0000	0.00
P-387	127	139	418.00	6.00	130.0000	0.00
P-388	129	130	1244.00	8.00	130.0000	0.00
P-389	129	131	628.00	8.00	100.0000	0.00
P-390	133	131	137.00	8.00	100.0000	0.00
P-391	133	132	591.00	6.00	130.0000	0.00
P-392	237	133	530.00	8.00	100.0000	0.00
P-394	136	143	127.00	6.00	100.0000	0.00
P-395	144	137	325.00	2.00	130.0000	0.00
P-396	139	138	125.00	6.00	130.0000	0.00
P-397	138	145	367.00	4.00	100.0000	0.00
P-398	139	140	154.00	6.00	130.0000	0.00
P-399	140	141	300.00	6.00	130.0000	0.00
P-400	141	147	361.00	8.00	130.0000	0.00
P-401	141	142	313.00	6.00	130.0000	0.00
P-402	143	142	302.00	6.00	130.0000	0.00

P I P E N A M E	N O D E N A M E S		L E N G T H (ft)	D I A M E T E R (in)	R O U G H N E S S C O E F F .	M I N O R L O S S C O E F F .
	#1	#2				
P-403	145	144	144.00	6.00	130.0000	0.00
P-404	145	146	316.00	6.00	130.0000	0.00
P-405	147	146	268.00	6.00	130.0000	0.00
P-406	147	148	139.00	8.00	130.0000	0.00
P-407	148	157	255.00	8.00	130.0000	0.00
P-408	142	149	499.00	4.00	140.0000	0.00
P-409	143	150	286.00	4.00	100.0000	0.00
P-410	150	151	215.00	4.00	100.0000	0.00
P-411	150	152	158.00	2.00	80.0000	0.00
P-412	152	153	211.00	2.00	100.0000	0.00
P-413	153	206	144.00	6.00	100.0000	0.00
P-414	151	153	150.00	6.00	100.0000	0.00
P-415	145	154	354.00	4.00	100.0000	0.00
P-416	154	158	365.00	4.00	100.0000	0.00
P-417	155	159	380.00	6.00	130.0000	0.00
F 418	140	260	239.00	2.00	130.0000	0.00
P-419	157	160	326.00	8.00	130.0000	0.00
P-420	149	161	606.00	2.00	100.0000	0.00
P-421	151	162	611.00	4.00	100.0000	0.00
P-422	158	163	371.00	2.00	130.0000	0.00
P-423	158	159	286.00	4.00	100.0000	0.00
P-424	159	164	360.00	4.00	130.0000	0.00
P-425	159	160	288.00	4.00	100.0000	0.00
P-426	160	165	345.00	8.00	130.0000	0.00
P-427	161	160	329.00	4.00	100.0000	0.00
P-428	161	166	359.00	6.00	130.0000	0.00
P-429	162	161	284.00	4.00	100.0000	0.00
P-430	162	167	332.00	4.00	100.0000	0.00
P-431	203	162	291.00	4.00	100.0000	0.00
P-432	163	168	810.00	2.00	130.0000	0.00
P-433	379	380	156.00	2.00	130.0000	0.00
P-434	166	176	352.00	6.00	130.0000	0.00
P-435	167	177	370.00	4.00	100.0000	0.00
P-436	170	172	490.00	8.00	130.0000	0.00
P-437	172	379	182.00	8.00	130.0000	0.00
P-438	170	171	201.00	6.00	130.0000	0.00
P-439	171	175	140.00	6.00	130.0000	0.00
P-440	171	173	156.00	6.00	130.0000	0.00
P-441	179	178	321.00	4.00	100.0000	0.00
P-442	180	179	325.00	4.00	100.0000	0.00
P-443	180	181	169.00	6.00	130.0000	0.00
P-444	181	182	237.00	2.00	130.0000	0.00
P-445	181	183	148.00	6.00	130.0000	0.00
P-446	183	185	344.00	6.00	130.0000	0.00
P-447	185	184	373.00	8.00	100.0000	0.00
P-448	186	180	473.00	6.00	100.0000	0.00
P-449	186	187	320.00	4.00	100.0000	0.00
P-450	187	183	483.00	4.00	100.0000	0.00
P-451	188	185	540.00	6.00	100.0000	0.00
P-452	189	188	315.00	10.00	100.0000	0.00
P-453	189	190	428.00	8.00	100.0000	0.00
P-454	195	196	173.00	6.00	130.0000	0.00
P-455	196	198	341.00	6.00	130.0000	0.00
P-456	197	186	472.00	6.00	100.0000	0.00
P-457	198	197	490.00	6.00	100.0000	0.00
P-458	199	198	168.00	4.00	100.0000	0.00
P-459	199	200	493.00	4.00	100.0000	0.00
P-460	201	199	168.00	4.00	100.0000	0.00
P-461	202	201	390.00	4.00	100.0000	0.00
P-462	203	202	397.00	4.00	100.0000	0.00

P I P E N A M E	N O D E N A M E S		L E N G T H (ft)	D I A M E T E R (in)	R O U G H N E S S C O E F F .	M I N O R L O S S C O E F F .
	#1	#2				
P-463	203	204	504.00	6.00	80.0000	0.00
P-464	206	205	404.00	6.00	130.0000	0.00
P-465	205	203	203.00	6.00	130.0000	0.00
P-466	210	206	237.00	6.00	100.0000	0.00
P-467	379	174	699.00	8.00	130.0000	0.00
P-468	207	208	505.00	6.00	100.0000	0.00
P-469	208	214	234.00	6.00	100.0000	0.00
P-470	211	210	194.00	6.00	100.0000	0.00
P-471	212	211	311.00	6.00	100.0000	0.00
P-472	212	201	520.00	4.00	130.0000	0.00
P-473	214	220	510.00	6.00	100.0000	0.00
P-474	216	212	334.00	6.00	100.0000	0.00
P-475	216	198	516.00	4.00	100.0000	0.00
P-476	218	216	178.00	6.00	100.0000	0.00
P-477	218	217	134.00	1.00	130.0000	0.00
P-478	219	218	506.00	6.00	130.0000	0.00
P-479	244	220	328.00	6.00	130.0000	0.00
P-480	218	223	162.00	6.00	100.0000	0.00
P-481	229	191	527.00	2.00	120.0000	0.00
P-482	223	224	169.00	6.00	100.0000	0.00
P-483	200	197	166.00	4.00	120.0000	0.00
P-484	224	225	191.00	6.00	100.0000	0.00
P-485	225	193	522.00	10.00	100.0000	0.00
P-486	225	192	546.00	4.00	130.0000	0.00
P-487	226	225	553.00	10.00	100.0000	0.00
P-488	228	227	473.00	2.00	80.0000	0.00
P-489	225	229	112.00	8.00	80.0000	0.00
P-490	228	230	378.00	8.00	80.0000	0.00
P-491	229	228	152.00	8.00	80.0000	0.00
P-492	231	226	740.00	12.00	130.0000	0.00
P-493	232	414	486.00	8.00	130.0000	0.00
P-494	233	235	537.00	8.00	130.0000	0.00
P-495	234	231	265.00	8.00	100.0000	0.00
P-496	123	231	1252.00	10.00	130.0000	0.00
P-497	235	234	268.00	8.00	130.0000	0.00
P-498	234	236	489.00	8.00	100.0000	0.00
P-499	236	237	614.00	8.00	100.0000	0.00
P-500	238	235	333.00	8.00	130.0000	0.00
P-501	238	239	289.00	8.00	130.0000	0.00
P-502	240	238	310.00	8.00	130.0000	0.00
P-503	241	240	762.00	8.00	130.0000	0.00
P-504	130	241	940.00	8.00	130.0000	0.00
P-505	192	195	136.00	6.00	130.0000	0.00
P-506	124	T-1	104.00	10.00	100.0000	0.00
P-507	R-5	379A	24.00	10.00	130.0000	0.00
P-508	379B	117	80.00	10.00	130.0000	0.00
P-509	117	242	231.00	10.00	130.0000	0.00
P-510	242	122	3449.00	10.00	130.0000	0.00
P-511	243	117	206.00	10.00	130.0000	0.00
P-512	R-4R	380A	24.00	10.00	130.0000	0.00
P-513	380B	243	80.00	10.00	116.0000	0.00
P-514	226	244	195.00	6.00	100.0000	0.00
P-515	244	224	554.00	2.00	130.0000	0.00
P-516	177	176	279.00	6.00	130.0000	0.00
P-517	163	164	264.00	4.00	120.0000	0.00
P-518	223	196	514.00	2.00	120.0000	0.00
P-519	173	245	344.00	6.00	130.0000	0.00
P-520	245	246	196.00	6.00	120.0000	0.00
P-522	248	247	277.00	10.00	130.0000	0.00
P-523	131	136	662.00	8.00	100.0000	0.00

P I P E N A M E	N O D E N A M E S		L E N G T H (ft)	D I A M E T E R (in)	R O U G H N E S S C O E F F .	M I N O R L O S S C O E F F .
	#1	#2				
P-524	207	136	374.00	6.00	100.0000	0.00
P-525	118	250	677.00	4.00	130.0000	0.00
P-526	250	119	1439.00	2.00	130.0000	0.00
P-527	251	141	123.00	8.00	130.0000	0.00
P-528	134	251	143.00	8.00	140.0000	0.00
P-529	142	252	100.00	6.00	130.0000	0.00
P-530	252	135	57.00	2.00	100.0000	0.00
P-531	212	253	95.00	6.00	100.0000	0.00
P-532	253	213	369.00	4.00	140.0000	0.00
P-533	254	223	223.00	6.00	100.0000	0.00
P-534	222	254	137.00	4.00	130.0000	0.00
P-535	200	255	134.00	1.00	120.0000	0.00
P-536	191	193	103.00	2.00	130.0000	0.00
P-537	243	256	1476.00	10.00	130.0000	0.00
P-538	256	118	671.00	10.00	130.0000	0.00
P-539	256	257	148.00	6.00	130.0000	0.00
P-540	123	258	62.00	8.00	130.0000	0.00
P-541	258	232	838.00	8.00	130.0000	0.00
P-542	258	381	347.00	8.00	130.0000	0.00
P-543	260	146	132.00	6.00	130.0000	0.00
P-545	211	261	94.00	6.00	100.0000	0.00
P-546	261	209	296.00	4.00	140.0000	0.00
P-547	216	262	80.00	4.00	100.0000	0.00
P-548	262	215	226.00	2.00	100.0000	0.00
P-549	121	263	792.00	8.00	130.0000	0.00
P-550	128	263	136.00	8.00	130.0000	0.00
P-551	263	129	183.00	8.00	100.0000	0.00
P-552	245	264	233.00	6.00	120.0000	0.00
P-553	264	172	184.00	6.00	130.0000	0.00
P-554	264	265	202.00	6.00	130.0000	0.00
P-555	148	266	159.00	6.00	130.0000	0.00
P-556	178	268	813.00	2.00	130.0000	0.00
P-557	135	269	144.00	2.00	130.0000	0.00
P-558	135	270	134.00	2.00	130.0000	0.00
P-559	136	271	112.00	2.00	130.0000	0.00
P-560	124	272	288.00	10.00	100.0000	0.00
P-561	272	125	298.00	12.00	100.0000	0.00
P-562	258	417	740.00	10.00	130.0000	0.00
P-563	272	274	384.00	1.00	130.0000	0.00
P-564	274	128	246.00	1.00	130.0000	0.00
P-565	125	275	405.00	8.00	100.0000	0.00
P-566	275	128	326.00	8.00	100.0000	0.00
P-567	220	219	46.00	6.00	130.0000	0.00
P-568	414	233	435.00	8.00	130.0000	0.00
P-569	414	416	261.00	8.00	130.0000	0.00
P-570	417	273	429.00	10.00	130.0000	0.00
P-571	417	418	319.00	8.00	130.0000	0.00
P-637	330	349	180.00	8.00	130.0000	0.00
P-640	184	330	52.00	8.00	100.0000	0.00
P-645	330	346	648.00	8.00	130.0000	0.00
P-688	128	134	643.00	8.00	130.0000	0.00
P-689	165	169	351.00	8.00	130.0000	0.00
P-690	193	192	47.00	6.00	130.0000	0.00
P-691	365	189	385.00	10.00	130.0000	0.00
P-692	365	422	450.00	8.00	130.0000	0.00
P-693	193	365	210.00	10.00	100.0000	0.00
P-696	169	367	246.00	8.00	130.0000	0.00
P-697	367	170	355.00	8.00	130.0000	0.00
P-698	367	360	256.00	8.00	130.0000	0.00
P-699	122	369	569.00	10.00	130.0000	0.00

P I P E N A M E	N O D E N A M E S		L E N G T H (ft)	D I A M E T E R (in)	R O U G H N E S S C O E F F .	M I N O R L O S S C O E F F .
	#1	#2				
P-700	369	248	242.00	10.00	130.0000	0.00
P-701	369	276	722.00	10.00	130.0000	0.00
P-702	118	115	606.00	10.00	130.0000	0.00
P-703	371	120	804.00	10.00	130.0000	0.00
P-704	371	372	254.00	8.00	130.0000	0.00
P-705	372	374	258.00	4.00	130.0000	0.00
P-706	372	373	693.00	4.00	130.0000	0.00
P-707	257	410	476.00	6.00	130.0000	0.00
P-708	190	712	724.00	8.00	100.0000	0.00
P-709	712	713	1345.00	8.00	100.0000	0.00
P-710	713	714	427.00	4.00	100.0000	0.00
P-711	712	715	579.00	8.00	100.0000	0.00
P-712	276	277	713.00	10.00	130.0000	0.00
P-713	276	370	349.00	10.00	130.0000	0.00
P-714	370	278	206.00	10.00	130.0000	0.00
P-724	228	723	183.00	8.00	130.0000	0.00
P-725	723	721	331.00	8.00	130.0000	0.00
P-727	723	726	415.00	8.00	130.0000	0.00
P-728	115	371	1330.00	10.00	130.0000	0.00
P-732	154	154a	139.00	4.00	130.0000	0.00
P-734	154a	154b	184.00	4.00	130.0000	0.00
P-736	257	412	446.00	6.00	130.0000	0.00
P-756	247	386	168.00	10.00	130.0000	0.00
P-757	386	123	1486.00	10.00	130.0000	0.00
P-759	306	300	106.00	10.00	130.0000	0.00
P-761	388	390	457.00	10.00	130.0000	0.00
P-763	390	392	623.00	8.00	130.0000	0.00
P-765	392	394	365.00	8.00	130.0000	0.00
P-767	248	398	690.00	10.00	130.0000	0.00
P-768	398	400	25.00	6.00	130.0000	0.00
P-769	398	396	496.00	10.00	130.0000	0.00
P-770	396	247	662.00	10.00	130.0000	0.00
P-789	219	221	179.00	4.00	130.0000	0.00
P-790	221	222	148.00	4.00	130.0000	0.00
P-791	420	422	222.00	8.00	130.0000	0.00
P-792	422	194	265.00	8.00	130.0000	0.00
P-793	194	791	225.00	8.00	130.0000	0.00
P-794	726	791	327.00	8.00	130.0000	0.00
P-795	230	728	418.00	8.00	130.0000	0.00
P-796	728	729	250.00	2.00	130.0000	0.00
P-797	728	267	1263.00	8.00	100.0000	0.00
P-799	192	724	213.00	4.00	130.0000	0.00
P-379a	379A	I-Pump 5	2.00	6.00	130.0000	0.00
P-380a	380A	I-Pump 4R	2.00	6.00	130.0000	0.00

P U M P / L O S S E L E M E N T D A T A

THERE IS A DEVICE AT NODE Pump 4R DESCRIBED BY THE FOLLOWING DATA: (ID= 2)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
320.00	0.00	65.00
240.00	600.00	74.00
160.00	800.00	73.50

THERE IS A DEVICE AT NODE Pump 5 DESCRIBED BY THE FOLLOWING DATA: (ID= 1)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
317.00	0.00	63.00
215.00	600.00	43.00
145.00	900.00	59.00

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
115		6.47	140.00	
117		0.00	54.00	
118		0.83	115.00	
119		5.81	40.00	
120		0.83	174.00	
121		1.66	50.00	
122		3.32	46.00	
123		1.66	41.00	
124		0.83	184.00	
125		0.00	75.00	
126		1.66	42.00	
127		0.00	43.00	
128		2.49	45.00	
129		0.83	42.00	
130		0.00	44.00	
131		2.49	40.00	
132		20.29	43.00	
133		-14.48	39.00	
134		0.00	39.00	
135		-10.63	37.00	
136		-13.11	36.00	
137		20.05	37.00	
138		0.00	36.00	
139		3.97	38.00	
140		5.29	38.00	
141		6.74	38.00	
142		-10.47	37.00	
143		4.80	36.00	
144		1.93	37.00	
145		-12.55	37.00	
146		2.49	36.00	
147		9.96	36.00	
148		-13.11	36.00	
149		9.96	36.00	
150		1.66	36.00	
151		3.32	36.00	
152		1.66	36.00	
153		0.83	36.00	
154		-9.78	36.00	
155		5.81	36.00	
157		4.98	36.00	
158		1.66	34.00	
159		4.98	35.00	
160		6.64	37.00	
161		8.30	37.00	
162		14.95	35.00	
163		-12.83	33.00	

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
164		3.32	34.00	
165		4.15	34.00	
166		4.15	35.00	
167		6.64	36.00	
168		14.49	34.00	
169		0.83	34.00	
170		0.00	35.00	
171		-16.41	35.00	
172		2.49	36.00	
173		4.98	35.00	
174		168.96	35.00	
175		22.23	36.00	
176		3.32	36.00	
177		0.83	36.00	
178		1.93	37.00	
179		0.00	38.00	
180		-14.21	37.00	
181		-15.87	38.00	
182		18.36	37.00	
183		2.49	39.00	
184		1.66	38.00	
185		7.47	39.00	
186		1.66	37.00	
187		4.98	37.00	
188		7.47	39.00	
189		4.98	38.00	
190		5.81	39.00	
191		1.66	39.00	
192		-16.97	39.00	
193		0.00	39.00	
194		8.30	38.00	
195		2.49	38.00	
196		2.49	38.00	
197		0.83	37.00	
198		2.49	36.00	
199		0.83	37.00	
200		-11.17	36.00	
201		4.98	37.00	
202		2.49	39.00	
203		-12.26	36.00	
204		22.23	36.00	
205		2.49	36.00	
206		2.49	36.00	
207		16.03	38.00	
208		13.82	39.00	
209		26.09	39.00	
210		0.83	39.00	
211		-18.62	37.00	
212		-11.99	36.00	
213		20.29	40.00	
214		0.83	39.00	
215		24.16	38.00	
216		-14.19	37.00	
217		14.49	37.00	
218		-10.34	37.00	
219		4.15	39.00	
220		6.22	39.00	
221		1.66	39.00	
222		2.49	38.00	

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
223		0.83	37.00	
224		2.49	37.00	
225		3.32	38.00	
226		0.83	40.00	
227		16.43	40.00	
228		-13.94	39.00	
229		4.15	40.00	
230		2.49	41.00	
231		0.83	40.00	
232		2.49	42.00	
233		20.57	43.00	
234		1.66	40.00	
235		0.00	38.00	
236		0.83	40.00	
237		0.83	35.00	
238		-4.44	40.00	
239		14.49	40.00	
240		0.00	41.00	
241		0.83	44.00	
242		0.00	40.00	
243		0.00	50.00	
244		2.49	40.00	
245		-13.09	36.00	
246		22.23	36.00	
247		88.88	43.00	
248		0.00	42.00	
250		1.66	50.00	
251		2.24	37.00	
252		0.00	37.00	
253		0.00	36.00	
254		0.00	37.00	
255		14.49	37.00	
256		-24.96	84.00	
257		-12.56	84.00	
258		-24.49	41.00	
260		13.39	36.00	
261		0.00	37.00	
262		0.00	37.00	
263		0.00	41.00	
264		-14.47	36.00	
265		26.09	36.00	
266		16.43	36.00	
267		299.63	42.00	
268		16.43	38.00	
269		14.49	37.00	
270		14.49	37.00	
271		16.43	37.00	
272		0.00	144.00	
273		14.49	41.00	
274		2.49	92.00	
275		0.00	46.00	
276		0.00	44.00	
277		0.00	45.00	
278		0.00	45.00	
330		-20.28	35.00	
346		26.09	35.00	
349		387.47	35.00	
365		12.00	39.00	
367		-17.51	34.50	

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
368		24.16	36.00	
369		-13.66	44.00	
370		14.49	45.00	
371		-22.48	180.00	
372		-8.70	153.00	
373		20.29	160.00	
374		18.36	150.00	
379		-13.66	36.00	
380		14.49	36.00	
381		14.49	41.00	
386		0.00	43.00	
388		0.00	43.00	
390		0.00	43.00	
392		0.00	42.00	
394		0.00	42.00	
396		0.83	43.00	
398		0.00	43.00	
400		0.00	43.00	
410		29.96	102.00	
412		18.36	54.00	
414		0.00	43.00	
416		0.00	43.00	
417		0.00	41.00	
418		0.00	41.00	
420		0.00	38.00	
422		0.00	38.00	
712		-13.66	40.00	
713		0.00	40.00	
714		22.61	40.00	
715		175.84	40.00	
721		18.36	39.00	
723		-11.72	39.00	
724		20.29	39.00	
726		16.61	38.00	
728		-9.88	41.00	
729		16.43	41.00	
791		4.44	38.00	
154a		0.00	36.00	
154b		16.43	36.00	
379A		0.00	50.00	
379B		0.00	50.00	
380A		0.00	50.00	
380B		0.00	50.00	
O-Pump 4R		0.00	50.00	
O-Pump 5		0.00	50.00	
R-5		----	50.00	50.00
R-4R		----	50.00	50.00
T-1		----	186.00	201.00
I-Pump 5		0.00	50.00	
I-Pump 4R		0.00	50.00	

TANK WATER ELEVATION

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

SYSTEM CONFIGURATION

NUMBER OF PIPES(p) = 246
 NUMBER OF END NODES(j) = 210
 NUMBER OF PRIMARY LOOPS(l) = 34
 NUMBER OF SUPPLY NODES(f) = 3
 NUMBER OF SUPPLY ZONES(z) = 1

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 Case: 0

RESULTS OBTAINED AFTER 5 TRIALS: ACCURACY = 0.00011

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE (gpm)	HEAD LOSS (ft)	MINOR LOSS (ft)	LINE VELO. (ft/s)	HL+ML/ 1000 (ft/ft)	HL/ 1000 (ft/ft)
	#1	#2						
P-379	O-Pump 5	379B	0.00	0.00	0.00	0.00	0.00	0.00
P-380	O-Pump 4R	380B	0.00	0.00	0.00	0.00	0.00	0.00
P-382	146	155	54.77	0.12	0.00	0.62	0.34	0.34
P-383	119	121	8.63	2.71	0.00	0.88	2.35	2.35
P-384	120	124	-591.98	0.69	0.00	2.42	2.33	2.33
P-385	125	126	318.14	5.64	0.00	3.61	14.45	14.45
P-386	126	127	316.48	3.39	0.00	3.59	8.81	8.81
P-387	127	139	316.48	3.68	0.00	3.59	8.81	8.81
P-388	129	130	210.12	1.26	0.00	1.34	1.02	1.02
P-389	129	131	270.91	1.66	0.00	1.73	2.64	2.64
P-390	133	131	-186.17	0.18	0.00	1.19	1.32	1.32
P-391	133	132	20.29	0.03	0.00	0.23	0.05	0.05
P-392	237	133	-180.36	0.66	0.00	1.15	1.24	1.24
P-394	136	143	-78.13	0.14	0.00	0.89	1.07	1.07
P-395	144	137	20.05	3.64	0.00	2.05	11.20	11.20
P-396	139	138	74.72	0.08	0.00	0.85	0.61	0.61
P-397	138	145	74.72	2.61	0.00	1.91	7.12	7.12
P-398	139	140	237.79	0.80	0.00	2.70	5.19	5.19
P-399	140	141	215.51	1.30	0.00	2.45	4.32	4.32
P-400	141	147	291.38	0.67	0.00	1.86	1.86	1.86
P-401	141	142	204.44	1.23	0.00	2.32	3.92	3.92
P-402	143	142	-175.08	0.89	0.00	1.99	2.94	2.94
P-403	145	144	21.98	0.01	0.00	0.25	0.06	0.06
P-404	145	146	46.99	0.08	0.00	0.53	0.26	0.26
P-405	147	146	6.67	0.00	0.00	0.08	0.01	0.01
P-406	147	148	274.75	0.23	0.00	1.75	1.67	1.67
P-407	148	157	271.43	0.42	0.00	1.73	1.63	1.63
P-408	142	149	21.48	0.19	0.00	0.55	0.38	0.38
P-409	143	150	92.15	3.00	0.00	2.35	10.49	10.49
P-410	150	151	80.40	1.75	0.00	2.05	8.15	8.15
P-411	150	152	10.09	1.22	0.00	1.03	7.72	7.72
P-412	152	153	8.43	0.77	0.00	0.86	3.66	3.66
P-413	153	206	104.36	0.26	0.00	1.18	1.83	1.83
P-414	151	153	96.76	0.24	0.00	1.10	1.59	1.59
P-415	145	154	18.29	0.19	0.00	0.47	0.53	0.53
P-416	154	158	11.64	0.08	0.00	0.30	0.23	0.23
P-417	155	159	48.96	0.11	0.00	0.56	0.28	0.28
P-418	140	260	16.99	1.97	0.00	1.74	8.24	8.24
P-419	157	160	266.45	0.51	0.00	1.70	1.58	1.58
P-420	149	161	11.52	3.95	0.00	1.18	6.52	6.52

P I P E N A M E	N O D E N U M B E R S		F L O W R A T E (gpm)	H E A D L O S S (ft)	M I N O R L O S S (ft)	L I N E V E L O . (ft/s)	H L + M L / 1 0 0 0 (ft/ft)	H L / 1 0 0 0 (ft/ft)
	#1	#2						
P-421	151	162	-19.68	0.37	0.00	0.50	0.60	0.60
P-422	158	163	1.64	0.04	0.00	0.17	0.11	0.11
P-423	158	159	8.34	0.04	0.00	0.21	0.12	0.12
P-424	159	164	3.34	0.00	0.00	0.09	0.01	0.01
P-425	159	160	48.99	0.94	0.00	1.25	3.26	3.26
P-426	160	165	215.47	0.37	0.00	1.38	1.06	1.06
P-427	161	160	-93.33	3.53	0.00	2.38	10.74	10.74
P-428	161	166	41.90	0.07	0.00	0.48	0.21	0.21
P-429	162	161	-54.65	1.13	0.00	1.40	3.99	3.99
P-430	162	167	-26.96	0.36	0.00	0.69	1.08	1.08
P-431	203	162	-46.97	0.88	0.00	1.20	3.01	3.01
P-432	163	168	14.49	4.97	0.00	1.48	6.14	6.14
P-433	379	380	14.49	0.96	0.00	1.48	6.14	6.14
P-434	166	176	37.75	0.06	0.00	0.43	0.17	0.17
P-435	167	177	-33.60	0.60	0.00	0.86	1.62	1.62
P-436	170	172	147.59	0.26	0.00	0.94	0.53	0.53
P-437	172	379	169.79	0.12	0.00	1.08	0.68	0.68
P-438	170	171	56.25	0.07	0.00	0.64	0.36	0.36
P-439	171	175	22.23	0.01	0.00	0.25	0.06	0.06
P-440	171	173	50.43	0.05	0.00	0.57	0.29	0.29
P-441	179	178	18.36	0.17	0.00	0.47	0.53	0.53
P-442	180	179	18.36	0.17	0.00	0.47	0.53	0.53
P-443	180	181	123.46	0.26	0.00	1.40	1.54	1.54
P-444	181	182	18.36	2.26	0.00	1.87	9.52	9.52
P-445	181	183	120.97	0.22	0.00	1.37	1.48	1.48
P-446	183	185	155.73	0.81	0.00	1.77	2.37	2.37
P-447	185	184	394.94	1.98	0.00	2.52	5.31	5.31
P-448	186	180	127.61	1.26	0.00	1.45	2.66	2.66
P-449	186	187	42.23	0.79	0.00	1.08	2.47	2.47
P-450	187	183	37.25	0.95	0.00	0.95	1.96	1.96
P-451	188	185	246.68	4.87	0.00	2.80	9.02	9.02
P-452	189	188	254.15	0.25	0.00	1.04	0.79	0.79
P-453	189	190	190.60	0.59	0.00	1.22	1.38	1.38
P-454	195	196	27.79	0.02	0.00	0.32	0.10	0.10
P-455	196	198	36.56	0.06	0.00	0.41	0.16	0.16
P-456	197	186	171.50	2.17	0.00	1.95	4.60	4.60
P-457	198	197	130.61	1.36	0.00	1.48	2.78	2.78
P-458	199	198	35.35	0.30	0.00	0.90	1.78	1.78
P-459	199	200	45.04	1.37	0.00	1.15	2.79	2.79
P-460	201	199	81.22	1.40	0.00	2.07	8.31	8.31
P-461	202	201	40.72	0.90	0.00	1.04	2.31	2.31
P-462	203	202	43.21	1.02	0.00	1.10	2.58	2.58
P-463	203	204	22.23	0.08	0.00	0.25	0.16	0.16
P-464	206	205	8.70	0.00	0.00	0.10	0.01	0.01
P-465	205	203	6.21	0.00	0.00	0.07	0.01	0.01
P-466	210	206	-93.17	0.35	0.00	1.06	1.49	1.49
P-467	379	174	168.96	0.47	0.00	1.08	0.68	0.68
P-468	207	208	141.02	1.62	0.00	1.60	3.20	3.20
P-469	208	214	127.20	0.62	0.00	1.44	2.65	2.65
P-470	211	210	-92.34	0.28	0.00	1.05	1.46	1.46
P-471	212	211	-84.87	0.39	0.00	0.96	1.25	1.25
P-472	212	201	45.47	0.91	0.00	1.16	1.75	1.75
P-473	214	220	126.37	1.33	0.00	1.43	2.61	2.61
P-474	216	212	-31.10	0.07	0.00	0.35	0.19	0.19
P-475	216	198	61.19	2.54	0.00	1.56	4.92	4.92
P-476	218	216	40.06	0.06	0.00	0.45	0.31	0.31
P-477	218	217	14.49	24.05	0.00	5.92	179.49	179.49
P-478	219	218	137.75	0.95	0.00	1.56	1.89	1.89
P-479	244	220	76.85	0.21	0.00	0.87	0.64	0.64
P-480	218	223	93.54	0.24	0.00	1.06	1.50	1.50
P-481	229	191	4.42	0.42	0.00	0.45	0.79	0.79
P-482	223	224	132.39	0.48	0.00	1.50	2.85	2.85
P-483	200	197	41.72	0.29	0.00	1.07	1.73	1.73
P-484	224	225	140.95	0.61	0.00	1.60	3.20	3.20
P-485	225	193	445.79	1.17	0.00	1.82	2.24	2.24
P-486	225	192	50.78	1.17	0.00	1.30	2.14	2.14
P-487	226	225	710.66	2.94	0.00	2.90	5.32	5.32

P I P E N A M E	N O D E N U M B E R S		F L O W R A T E (gpm)	H E A D L O S S (ft)	M I N O R L O S S (ft)	L I N E V E L O . (ft/s)	H L + M L / 1 0 0 0 (ft/ft)	H L / 1 0 0 0 (ft/ft)
	#1	#2						
P-488	228	227	16.43	9.00	0.00	1.68	19.04	19.04
P-489	225	229	351.72	0.73	0.00	2.24	6.48	6.48
P-490	228	230	308.67	1.92	0.00	1.97	5.09	5.09
P-491	229	228	343.15	0.94	0.00	2.19	6.19	6.19
P-492	231	226	801.88	1.25	0.00	2.27	1.68	1.68
P-493	232	414	22.16	0.01	0.00	0.14	0.02	0.02
P-494	233	235	1.59	0.00	0.00	0.01	0.00	0.00
P-495	234	231	377.88	1.30	0.00	2.41	4.90	4.90
P-496	123	231	424.83	1.58	0.00	1.74	1.26	1.26
P-497	235	234	200.83	0.25	0.00	1.28	0.93	0.93
P-498	234	236	-178.70	0.60	0.00	1.14	1.22	1.22
P-499	236	237	-179.53	0.76	0.00	1.15	1.23	1.23
P-500	238	235	199.24	0.31	0.00	1.27	0.92	0.92
P-501	238	239	14.49	0.00	0.00	0.09	0.01	0.01
P-502	240	238	209.29	0.31	0.00	1.34	1.01	1.01
P-503	241	240	209.29	0.77	0.00	1.34	1.01	1.01
P-504	130	241	210.12	0.96	0.00	1.34	1.02	1.02
P-505	192	195	30.28	0.02	0.00	0.34	0.11	0.11
P-506	124	T-1	-1680.11	2.72	0.00	6.86	26.19	26.19
P-507	R-5	379A	0.00	0.00	0.00	0.00	0.00	0.00
P-508	379B	117	0.00	0.00	0.00	0.00	0.00	0.00
P-509	117	242	549.49	0.47	0.00	2.24	2.03	2.03
P-510	242	122	549.49	7.01	0.00	2.24	2.03	2.03
P-511	243	117	549.49	0.42	0.00	2.24	2.03	2.03
P-512	R-4R	380A	0.00	0.00	0.00	0.00	0.00	0.00
P-513	380B	243	0.00	0.00	0.00	0.00	0.00	0.00
P-514	226	244	90.38	0.27	0.00	1.03	1.41	1.41
P-515	244	224	11.05	2.06	0.00	1.13	3.71	3.71
P-516	177	176	-34.43	0.04	0.00	0.39	0.14	0.14
P-517	163	164	-0.02	0.00	0.00	0.00	0.00	0.00
P-518	223	196	11.26	2.29	0.00	1.15	4.46	4.46
P-519	173	245	45.45	0.08	0.00	0.52	0.24	0.24
P-520	245	246	22.23	0.01	0.00	0.25	0.07	0.07
P-522	248	247	401.09	0.31	0.00	1.64	1.13	1.13
P-523	131	136	82.24	0.19	0.00	0.52	0.29	0.29
P-524	207	136	-157.05	1.46	0.00	1.78	3.91	3.91
P-525	118	250	16.10	0.17	0.00	0.41	0.25	0.25
P-526	250	119	14.44	8.77	0.00	1.47	6.10	6.10
P-527	251	141	287.05	0.22	0.00	1.83	1.81	1.81
P-528	134	251	289.29	0.23	0.00	1.85	1.60	1.60
P-529	142	252	18.35	0.00	0.00	0.21	0.05	0.05
P-530	252	135	18.35	0.88	0.00	1.87	15.45	15.45
P-531	212	253	20.29	0.01	0.00	0.23	0.09	0.09
P-532	253	213	20.29	0.13	0.00	0.52	0.34	0.34
P-533	254	223	50.94	0.11	0.00	0.58	0.49	0.49
P-534	222	254	50.94	0.30	0.00	1.30	2.15	2.15
P-535	200	255	14.49	27.89	0.00	5.92	208.17	208.17
P-536	191	193	2.76	0.03	0.00	0.28	0.28	0.28
P-537	243	256	-549.49	3.00	0.00	2.24	2.03	2.03
P-538	256	118	-560.29	1.41	0.00	2.29	2.11	2.11
P-539	256	257	35.76	0.02	0.00	0.41	0.16	0.16
P-540	123	258	29.14	0.00	0.00	0.19	0.03	0.03
P-541	258	232	24.65	0.02	0.00	0.16	0.02	0.02
P-542	258	381	14.49	0.00	0.00	0.09	0.01	0.01
P-543	260	146	3.60	0.00	0.00	0.04	0.00	0.00
P-545	211	261	26.09	0.01	0.00	0.30	0.14	0.14
P-546	261	209	26.09	0.16	0.00	0.67	0.54	0.54
P-547	216	262	24.16	0.07	0.00	0.62	0.88	0.88
P-548	262	215	24.16	5.81	0.00	2.47	25.72	25.72
P-549	121	263	6.97	0.00	0.00	0.04	0.00	0.00
P-550	128	263	474.89	0.63	0.00	3.03	4.60	4.60
P-551	263	129	481.86	1.41	0.00	3.08	7.68	7.68
P-552	245	264	36.31	0.04	0.00	0.41	0.19	0.19
P-553	264	172	24.69	0.01	0.00	0.28	0.08	0.08
P-554	264	265	26.09	0.02	0.00	0.30	0.09	0.09
P-555	148	266	16.43	0.01	0.00	0.19	0.04	0.04
P-556	178	268	16.43	6.30	0.00	1.68	7.75	7.75

P I P E N A M E	N O D E N U M B E R S		F L O W R A T E (gpm)	H E A D L O S S (ft)	M I N O R L O S S (ft)	L I N E V E L O. (ft/s)	H L + M L / 1 0 0 0 (ft/ft)	H L / 1 0 0 0 (ft/ft)
	#1	#2						
P-557	135	269	14.49	0.88	0.00	1.48	6.14	6.14
P-558	135	270	14.49	0.82	0.00	1.48	6.14	6.14
P-559	136	271	16.43	0.87	0.00	1.68	7.75	7.75
P-560	124	272	1087.30	3.37	0.00	4.44	11.70	11.70
P-561	272	125	1081.66	1.42	0.00	3.07	4.77	4.77
P-562	258	417	14.49	0.00	0.00	0.06	0.00	0.00
P-563	272	274	5.63	11.99	0.00	2.30	31.21	31.21
P-564	274	128	3.14	2.61	0.00	1.28	10.60	10.60
P-565	125	275	763.53	7.30	0.00	4.87	18.02	18.02
P-566	275	128	763.53	5.87	0.00	4.87	18.02	18.02
P-567	220	219	197.00	0.17	0.00	2.24	3.66	3.66
P-568	414	233	22.16	0.01	0.00	0.14	0.02	0.02
P-569	414	416	0.00	0.00	0.00	0.00	0.00	0.00
P-570	417	273	14.49	0.00	0.00	0.06	0.00	0.00
P-571	417	418	0.00	0.00	0.00	0.00	0.00	0.00
P-637	330	349	387.47	0.57	0.00	2.47	3.16	3.16
P-640	184	330	393.28	0.27	0.00	2.51	5.27	5.27
P-645	330	346	26.09	0.01	0.00	0.17	0.02	0.02
P-688	128	134	289.29	1.18	0.00	1.85	1.84	1.84
P-689	165	169	211.32	0.36	0.00	1.35	1.03	1.03
P-690	193	192	-17.19	0.00	0.00	0.20	0.04	0.04
P-691	365	189	449.73	0.54	0.00	1.84	1.40	1.40
P-692	365	422	4.00	0.00	0.00	0.03	0.00	0.00
P-693	193	365	465.73	0.51	0.00	1.90	2.43	2.43
P-696	169	367	210.49	0.25	0.00	1.34	1.02	1.02
P-697	367	170	203.84	0.34	0.00	1.30	0.96	0.96
P-698	367	368	24.16	0.00	0.00	0.15	0.02	0.02
P-699	122	369	546.17	1.14	0.00	2.23	2.01	2.01
P-700	369	248	545.34	0.49	0.00	2.23	2.00	2.00
P-701	369	276	14.49	0.00	0.00	0.06	0.00	0.00
P-702	118	115	-577.21	1.35	0.00	2.36	2.23	2.23
P-703	371	120	-591.15	1.87	0.00	2.41	2.33	2.33
P-704	371	372	29.95	0.01	0.00	0.19	0.03	0.03
P-705	372	374	18.36	0.08	0.00	0.47	0.33	0.33
P-706	372	373	20.29	0.27	0.00	0.52	0.39	0.39
P-707	257	410	29.96	0.05	0.00	0.34	0.11	0.11
P-708	190	712	184.79	0.94	0.00	1.18	1.30	1.30
P-709	712	713	22.61	0.04	0.00	0.14	0.03	0.03
P-710	713	714	22.61	0.33	0.00	0.58	0.78	0.78
P-711	712	715	175.84	0.69	0.00	1.12	1.19	1.19
P-712	276	277	0.00	0.00	0.00	0.00	0.00	0.00
P-713	276	370	14.49	0.00	0.00	0.06	0.00	0.00
P-714	370	278	0.00	0.00	0.00	0.00	0.00	0.00
P-724	228	723	31.99	0.01	0.00	0.20	0.03	0.03
P-725	723	721	18.36	0.00	0.00	0.12	0.01	0.01
P-727	723	726	25.35	0.01	0.00	0.16	0.02	0.02
P-728	115	371	-583.68	3.02	0.00	2.38	2.27	2.27
P-732	154	154a	16.43	0.04	0.00	0.42	0.26	0.26
P-734	154a	154b	16.43	0.05	0.00	0.42	0.26	0.26
P-736	257	412	18.36	0.02	0.00	0.21	0.05	0.05
P-756	247	386	455.63	0.24	0.00	1.86	1.44	1.44
P-757	386	123	455.63	2.14	0.00	1.86	1.44	1.44
P-759	386	388	0.00	0.00	0.00	0.00	0.00	0.00
P-761	388	390	0.00	0.00	0.00	0.00	0.00	0.00
P-763	390	392	0.00	0.00	0.00	0.00	0.00	0.00
P-765	392	394	0.00	0.00	0.00	0.00	0.00	0.00
P-767	248	398	144.24	0.12	0.00	0.59	0.17	0.17
P-768	398	400	0.00	0.00	0.00	0.00	0.00	0.00
P-769	398	396	144.24	0.08	0.00	0.59	0.17	0.17
P-770	396	247	143.41	0.11	0.00	0.59	0.17	0.17
P-789	219	221	55.09	0.45	0.00	1.41	2.49	2.49
P-790	221	222	53.43	0.35	0.00	1.36	2.35	2.35
P-791	420	422	0.00	0.00	0.00	0.00	0.00	0.00
P-792	422	194	4.00	0.00	0.00	0.03	0.00	0.00
P-793	194	791	-4.30	0.00	0.00	0.03	0.00	0.00
P-794	726	791	8.74	0.00	0.00	0.06	0.00	0.00
P-795	230	728	306.18	0.85	0.00	1.95	2.04	2.04

P I P E N A M E	N O D E N U M B E R S		F L O W R A T E (gpm)	H E A D L O S S (ft)	M I N O R L O S S (ft)	L I N E V E L O . (ft/s)	H L + M L / 1 0 0 0 (ft/ft)	H L / 1 0 0 0 (ft/ft)
	#1	#2						
P-796	728	729	16.43	1.94	0.00	1.68	7.75	7.75
P-797	728	267	299.63	4.02	0.00	1.91	3.19	3.19
P-799	192	724	20.29	0.08	0.00	0.52	0.39	0.39
P-379a	379A	I-Pump 5	0.00	0.00	0.00	0.00	0.00	0.00
P-380a	380A	I-Pump 4R	0.00	0.00	0.00	0.00	0.00	0.00

P U M P / L O S S E L E M E N T R E S U L T S

NAME	FLOWRATE (gpm)	INLET HEAD (ft)	OUTLET HEAD (ft)	PUMP HEAD (ft)	EFFIC- ENCY (%)	USEFUL POWER (Hp)	INCREMTL COST (\$)	TOTAL COST (\$)	#PUMPS PARALLEL	#PUMPS SERIES	NPSH Avail. (ft)
Device "Pump 4R" is closed											
Pump 4R	0.00	0.00	136.93	0.0	75.00	0.	0.0	0.0	**	**	33.2
Device "Pump 5" is closed											
Pump 5	0.00	0.00	136.51	0.0	75.00	0.	0.0	0.0	**	**	33.2

N O D E R E S U L T S

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
115		6.47	192.70	140.00	52.70	22.83
117		0.00	186.51	54.00	132.51	57.42
118		0.83	191.35	115.00	76.35	33.08
119		5.81	182.40	40.00	142.40	61.71
120		0.83	197.59	174.00	23.59	10.22
121		1.66	179.69	50.00	129.69	56.20
122		3.32	179.03	46.00	133.03	57.65
123		1.66	174.71	41.00	133.71	57.94
124		0.83	198.28	184.00	14.28	6.19
125		0.00	193.49	75.00	118.49	51.34
126		1.66	187.85	42.00	145.85	63.20
127		0.00	184.46	43.00	141.46	61.30
128		2.49	180.32	45.00	135.32	58.64
129		0.83	178.28	42.00	136.28	59.06
130		0.00	177.02	44.00	133.02	57.64
131		2.49	176.62	40.00	136.62	59.20
132		20.29	176.41	43.00	133.41	57.81
133		-14.48	176.44	39.00	137.44	59.56
134		0.00	179.13	39.00	140.13	60.73
135		-10.63	176.57	37.00	139.57	60.48
136		-13.11	176.43	36.00	140.43	60.85
137		20.05	174.44	37.00	137.44	59.56
138		0.00	180.70	36.00	144.70	62.70
139		3.97	180.78	38.00	142.78	61.87
140		5.29	179.98	38.00	141.98	61.52
141		6.74	178.68	38.00	140.68	60.96
142		-10.47	177.46	37.00	140.46	60.86
143		4.80	176.57	36.00	140.57	60.91
144		1.93	178.08	37.00	141.08	61.14
145		-12.55	178.09	37.00	141.09	61.14
146		2.49	178.01	36.00	142.01	61.54

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
147		9.96	178.01	36.00	142.01	61.54
148		-13.11	177.78	36.00	141.78	61.44
149		9.96	177.27	36.00	141.27	61.22
150		1.66	173.57	36.00	137.57	59.61
151		3.32	171.81	36.00	135.81	58.85
152		1.66	172.35	36.00	136.35	59.08
153		0.83	171.57	36.00	135.57	58.75
154		-9.78	177.90	36.00	141.90	61.49
155		5.81	177.89	36.00	141.89	61.49
157		4.98	177.36	36.00	141.36	61.26
158		1.66	177.82	34.00	143.82	62.32
159		4.98	177.79	35.00	142.79	61.87
160		6.64	176.85	37.00	139.85	60.60
161		8.30	173.31	37.00	136.31	59.07
162		14.95	172.18	35.00	137.18	59.45
163		-12.83	177.78	33.00	144.78	62.74
164		3.32	177.78	34.00	143.78	62.31
165		4.15	176.48	34.00	142.48	61.74
166		4.15	173.24	35.00	138.24	59.90
167		6.64	172.54	36.00	136.54	59.17
168		14.49	172.81	34.00	138.81	60.15
169		0.83	176.12	34.00	142.12	61.59
170		0.00	175.53	35.00	140.53	60.90
171		-16.41	175.46	35.00	140.46	60.86
172		2.49	175.27	36.00	139.27	60.35
173		4.98	175.41	35.00	140.41	60.84
174	SEWA	168.96	174.67	35.00	139.67	60.52
175		22.23	175.45	36.00	139.45	60.43
176		3.32	173.18	36.00	137.18	59.44
177		0.83	173.14	36.00	137.14	59.43
178		1.93	162.55	37.00	125.55	54.40
179		0.00	162.72	38.00	124.72	54.04
180		-14.21	162.89	37.00	125.89	54.55
181		-15.87	162.63	38.00	124.63	54.01
182		18.36	160.37	37.00	123.37	53.46
183		2.49	162.41	39.00	123.41	53.48
184		1.66	159.61	38.00	121.61	52.70
185		7.47	161.59	39.00	122.59	53.12
186		1.66	164.15	37.00	127.15	55.10
187		4.98	163.36	37.00	126.36	54.75
188		7.47	166.47	39.00	127.47	55.24
189		4.98	166.72	38.00	128.72	55.78
190		5.81	166.13	39.00	127.13	55.09
191		1.66	167.80	39.00	128.80	55.81
192		-16.97	167.77	39.00	128.77	55.80
193		0.00	167.77	39.00	128.77	55.80
194		8.30	167.26	38.00	129.26	56.01
195		2.49	167.75	38.00	129.75	56.23
196		2.49	167.74	38.00	129.74	56.22
197		0.83	166.32	37.00	129.32	56.04
198		2.49	167.68	36.00	131.68	57.06
199		0.83	167.98	37.00	130.98	56.76
200		-11.17	166.61	36.00	130.61	56.60
201		4.98	169.38	37.00	132.38	57.36
202		2.49	170.28	39.00	131.28	56.89
203		-12.26	171.30	36.00	135.30	58.63
204		22.23	171.22	36.00	135.22	58.60
205		2.49	171.31	36.00	135.31	58.63
206		2.49	171.31	36.00	135.31	58.63

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
207		16.03	174.97	38.00	136.97	59.35
208		13.82	173.35	39.00	134.35	58.22
209		26.09	170.50	39.00	131.50	56.98
210		0.83	170.96	39.00	131.96	57.18
211		-18.62	170.67	37.00	133.67	57.93
212		-11.99	170.28	36.00	134.28	58.19
213		20.29	170.15	40.00	130.15	56.40
214		0.83	172.73	39.00	133.73	57.95
215		24.16	164.34	38.00	126.34	54.75
216		-14.19	170.22	37.00	133.22	57.73
217		14.49	146.22	37.00	109.22	47.33
218		-10.34	170.28	37.00	133.28	57.75
219		4.15	171.23	39.00	132.23	57.30
220		6.22	171.40	39.00	132.40	57.37
221		1.66	170.78	39.00	131.78	57.11
222		2.49	170.44	38.00	132.44	57.39
223		0.83	170.03	37.00	133.03	57.65
224		2.49	169.55	37.00	132.55	57.44
225		3.32	168.94	38.00	130.94	56.74
226		0.83	171.88	40.00	131.88	57.15
227		16.43	158.27	40.00	118.27	51.25
228		-13.94	167.27	39.00	128.27	55.58
229		4.15	168.21	40.00	128.21	55.56
230		2.49	165.35	41.00	124.35	53.08
231		0.83	173.13	40.00	133.13	57.69
232		2.49	174.69	42.00	132.69	57.50
233		20.57	174.68	43.00	131.68	57.06
234		1.66	174.43	40.00	134.43	58.25
235		0.00	174.68	38.00	136.68	59.23
236		0.83	175.03	40.00	135.03	58.51
237		0.83	175.78	35.00	140.78	61.01
238		-4.44	174.98	40.00	134.98	58.49
239		14.49	174.98	40.00	134.98	58.49
240		0.00	175.30	41.00	134.30	58.20
241		0.83	176.07	44.00	132.07	57.23
242		0.00	186.04	40.00	146.04	63.28
243		0.00	186.93	50.00	136.93	59.34
244		2.49	171.61	40.00	131.61	57.03
245		-13.09	175.33	36.00	139.33	60.38
246		22.23	175.31	36.00	139.31	60.37
247		08.88	177.09	43.00	134.09	58.10
248		0.00	177.40	42.00	135.40	58.67
250		1.66	191.17	50.00	141.17	61.17
251		2.24	178.91	37.00	141.91	61.49
252		0.00	177.45	37.00	140.45	60.86
253		0.00	170.28	36.00	134.28	58.19
254		0.00	170.14	37.00	133.14	57.69
255		14.49	138.71	37.00	101.71	44.08
256		-24.96	189.93	84.00	105.93	45.90
257		-12.56	189.91	84.00	105.91	45.89
258		-24.49	174.71	41.00	133.71	57.94
260		13.39	178.01	36.00	142.01	61.54
261		0.00	170.66	37.00	133.66	57.92
262		0.00	170.15	37.00	133.15	57.70
263		0.00	179.69	41.00	138.69	60.10
264		-14.47	175.28	36.00	139.28	60.36
265		26.09	175.27	36.00	139.27	60.35
266		16.43	177.77	36.00	141.77	61.44
267	SEWA	299.63	160.47	42.00	118.47	51.34

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
268		16.43	156.25	38.00	118.25	51.24
269		14.49	175.69	37.00	138.69	60.10
270		14.49	175.75	37.00	138.75	60.12
271		16.43	175.56	37.00	138.56	60.04
272		0.00	194.91	144.00	50.91	22.06
273		14.49	174.71	41.00	133.71	57.94
274		2.49	182.92	92.00	90.92	39.40
275		0.00	186.19	46.00	140.19	60.75
276		0.00	177.88	44.00	133.88	58.02
277		0.00	177.88	45.00	132.88	57.58
278		0.00	177.88	45.00	132.88	57.58
330		-20.28	159.34	35.00	124.34	53.88
346		26.09	159.32	35.00	124.32	53.87
349	STWA	387.47	158.77	35.00	123.77	53.63
365		12.00	167.26	39.00	128.26	55.58
367		-17.51	175.87	34.50	141.37	61.26
368		24.16	175.87	36.00	139.87	60.61
369		-13.66	177.89	44.00	133.89	58.02
370		14.49	177.88	45.00	132.88	57.58
371		-22.48	195.72	180.00	15.72	6.81
372		-8.70	195.71	153.00	42.71	18.51
373		20.29	195.44	160.00	35.44	15.36
374		18.36	195.63	150.00	45.63	19.77
379		-13.66	175.15	36.00	139.15	60.30
380		14.49	174.19	36.00	138.19	59.88
381		14.49	174.71	41.00	133.71	57.94
386		0.00	176.85	43.00	133.85	58.00
388		0.00	176.85	43.00	133.85	58.00
390		0.00	176.85	43.00	133.85	58.00
392		0.00	176.85	42.00	134.85	58.43
394		0.00	176.85	42.00	134.85	58.43
396		0.83	177.20	43.00	134.20	58.15
398		0.00	177.28	43.00	134.28	58.19
400		0.00	177.28	43.00	134.28	58.19
410		29.96	189.86	102.00	87.86	38.07
412		18.36	189.89	54.00	135.89	58.88
414		0.00	174.68	43.00	131.68	57.06
416		0.00	174.68	43.00	131.68	57.06
417		0.00	174.71	41.00	133.71	57.94
418		0.00	174.71	41.00	133.71	57.94
420		0.00	167.26	38.00	129.26	56.01
422		0.00	167.26	38.00	129.26	56.01
712		-13.66	165.18	40.00	125.18	54.25
713		0.00	165.15	40.00	125.15	54.23
714		22.61	164.82	40.00	124.82	54.09
715	SEWA	175.84	164.50	40.00	124.50	53.95
721		18.36	167.26	39.00	128.26	55.58
723		-11.72	167.27	39.00	128.27	55.58
724		20.29	167.69	39.00	128.69	55.76
726		16.61	167.26	38.00	129.26	56.01
728		-9.88	164.50	41.00	123.50	53.51
729		16.43	162.56	41.00	121.56	52.68
791		4.44	167.26	38.00	129.26	56.01
154a		0.00	177.87	36.00	141.87	61.48
154b		16.43	177.82	36.00	141.82	61.45
379A		0.00	50.00	50.00	0.00	0.00
379B		0.00	186.51	50.00	136.51	59.16
380A		0.00	50.00	50.00	0.00	0.00
380B		0.00	186.93	50.00	136.93	59.34

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
O-Pump 4R		0.00	186.93	50.00	136.93	59.34
O-Pump 5		0.00	186.51	50.00	136.51	59.16
R-5		----	50.00	50.00	0.00	0.00
R-4R		----	50.00	50.00	0.00	0.00
T-1		----	201.00	186.00	15.00	6.50
I-Pump 5		0.00	50.00	50.00	0.00	0.00
I-Pump 4R		0.00	50.00	50.00	0.00	0.00

M A X I M U M A N D M I N I M U M V A L U E S

P R E S S U R E S

JUNCTION NUMBER	MAXIMUM PRESSURES (psi)	JUNCTION NUMBER	MINIMUM PRESSURES (psi)
242	63.28	124	6.19
126	63.20	T-1	6.50
163	62.74	371	6.81
138	62.70	120	10.22
158	62.32	373	15.36

V E L O C I T I E S

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-506	6.86	P-517	0.00
P-477	5.92	P-494	0.01
P-535	5.92	P-692	0.03
P-565	4.87	P-792	0.03
P-566	4.87	P-793	0.03

H L + M L / 1 0 0 0

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-535	208.17	P-517	0.00
P-477	179.49	P-494	0.00
P-563	31.21	P-692	0.00
P-506	26.19	P-792	0.00
P-548	25.72	P-793	0.00

H L / 1 0 0 0

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-535	208.17	P-517	0.00
P-477	179.49	P-494	0.00
P-563	31.21	P-692	0.00
P-506	26.19	P-792	0.00
P-548	25.72	P-793	0.00

S U M M A R Y O F I N F L O W S A N D O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
R-5	0.00	
R-4R	0.00	
T-1	1680.11	
NET SYSTEM INFLOW = 1680.11		
NET SYSTEM OUTFLOW = 0.00		
NET SYSTEM DEMAND = 1680.11		

***** HYDRAULIC ANALYSIS COMPLETED *****